Thursday, March 7, 1991
Poster Displayed: 9:00AM–12:00NOON
Author Present: 11:00AM–12:00NOON
Hall F, West Concourse
Directional, Rotational, and Extraction Atherectomy

THE ROLE OF ATHERECTOMY IN THE MANAGEMENT OF SAPHENOUS VEIN GRAFTS DISEASE.

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Balloon angioplasty of saphenous vein grafts, particularly old vessels with extensive atheromatous degeneration and thrombosis has a low success rate and a high acute complication rate of MI and distal embolization. We evaluated the efficacy and safety of atherectomy utilizing the Transluminal Extraction Catheter (TEC) in the management of pts with saphenous vein graft stenosis. This system consists of a flexible hollow torque tube with a cutting head introduced across a guidewire allowing multiple passes. Debris is continually extracted by vacuum during cutting activity.

To date, 125 lesions(mean graft age 8.8 yrs: range 1-18)have been attempted in 98 pts (mean age: 66; range 37-81), 30% were considered unsuitable for PTCA due to diffuse disease or intraluminal thrombus. The target lesion was located in the graft to LAD (37%), CIRC (38%) and RCA (25%). TEC alone was performed in 24% and TEC with adjunctive PTCA in 76%. The procedural success rate was 96% (120/125) (< than 50% residual stenosis). There was no evidence of distal embolization with acute MI. There were two in hospital mortalities, one patient died of progressive cardiac decompensation 24 hours post procedure despite adequate angiographic result and one of sudden death 4 days post procedure.

Conclusion: TEC atherectomy can be performed in patients with extensive saphenous vein graft disease with a high primary success rate and low complication rate. However its impact on restenosis in this group needs to be defined.

EXPERIENCE OF DIRECTIONAL CORONARY ATHERECTOMY OVER FOUR YEARS

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Directional coronary atherectomy (DCA) was first attempted in October 1986 and subsequently 32 lesions were treated with a success rate of 42% prior to April 1988. Between April 1988 and June 1990, 578 lesions in 502 procedures were treated at Sequoia Hospital. Mean age was 59 years old and 42% had unstable angina. Fifty five percent of lesions were previously treated by angioplasty. Sixteen procedures were performed as a salvage procedure for failed PTCA. Sixty five lesions (10.7%) were treated twice or more by DCA for subsequent restenosis. A successful procedure was achieved in 98.2%. Success rates per vessel were left main (24) 79%, left anterior descending (276) 92%, circumflex (25) 88%, right coronary artery (144) 83%, grafts (106) 93% and diagonal (3) 100%. Stenoses were reduced from 76% to 15% ($p<0.0001$) with a mean retrieved tissue weight of 16.9 mg. Major complications were observed in 4.2% (death 0.4%, complications requiring bypass surgery (CABG) 4.0%, Q wave myocardial infarction 1.0%). Of the 2 deaths, 1 patient had left main occlusion and the other died of multiple medical problems. The reasons for CABG (20) were; perforation 4, DCA induced occlusion or impending occlusion 11, guide induced dissection 1, PTCA related occlusion 4. Perforation occurred in 5 patients (0.9%); 4 pseudoaneurysms requiring CABG and 1 arterio-venous fistula. None had tamponade. Other significant complications included non Q wave myocardial infarction 6.0%, distal embolization 1.6% and groin repair 1.6%.
In conclusion, a large experience at our center demonstrated that DCA is safe and effective therapy for obstructive coronary lesions.

RESCUE DIRECTIONAL CORONARY ATHERECTOMY FOR FAILED BALLOON ANGIOPLASTY

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Directional coronary atherectomy (DCA) was used as a rescue procedure for 30 lesions in 30 patients after failed percutaneous transluminal coronary angioplasty (PTCA) between June 1988 and September 1990. Eighteen of the DCA procedures were performed during the same setting as PTCA, 11 were performed within 2 weeks of failed PTCA and 1 DCA was performed several months after failed PTCA. The involved vessels included the left anterior descending in 12, the right coronary artery in 11, the left circumflex in 6 and the left main coronary artery in 1. Causes of failed PTCA necessitating further intervention included significant dissection or flap in 14 (47%), failure to dilate in 9 (30%), vessel occlusion in 6 (20%) and a significant filling defect in 1 (3%). All but 4 rescue DCA procedures were successful (87%). None of the patients who had successful DCA had subsequent acute occlusion of the vessel. Of the 4 patients with unsuccessful rescue DCA, 1 resulted from refractory thrombosis initially observed during PTCA, 1 resulted from perforation of the vessel during DCA and 1 occurred after a lesion distal to the DCA site was apparently traumatized by the device. All 3 of these patients (10%) were treated with immediate coronary bypass graft surgery. The fourth patient had only a partially successful DCA due to undersizing of the device and subsequently underwent successful DCA with a larger device at a later date.
In conclusion, in our experience, rescue DCA is an effective intervention for failed PTCA in selected cases.

EXCISION BEYOND THE "NORMAL" ARTERIAL WALL WITH DIRECTIONAL CORONARY ATHERECTOMY - ACUTE AND LONG-TERM OUTCOME.

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Directional coronary atherectomy (DCA) can cause acute ectasia (final area stenosis < 0%), due presumably to an excision deeper than the diameter of the "normal" arterial lumen. In a multicenter study in which quantitative coronary angiography was performed after DCA in 400 lesions of 391 pts, post-DCA ectasia occurred in 46 (11.6%) lesions. While no immediate ischemic complications were noted, in one case, subacute closure developed 4 days following DCA with subsequent urgent bypass surgery. By univariate analysis, ectasia was associated with pre-DCA thrombus ($p=0.003$) but not with operator experience, morphologic characteristics such as eccentricity, complexity, calcifications, bend or branch location, length or previous restenosis. In addition, no correlation was found with pre-DCA normal or minimal arterial cross-sectional area or with coronary angioplasty after DCA. Angiographic follow-up was available in 27 cases (60%). Restenosis, defined by an area stenosis $\geq$75%, was observed in 62.9% of lesions with angiographic follow-up. Further expansion to aneurysmal dimensions (increase in area stenosis by $\geq$ 25%) occurred in 2 (7.4%) lesions.

We conclude that 1) the risk of ectasia appears greatest with lesions with thrombus and 2) ectasia should be avoided because of an apparent high rate of restenosis and occasional aneurysm formation.